

Wildfire Watershed Assessment Narrative

The Front Range Watershed Wildfire Protection Working Group was formed to develop and implement a strategy to protect critical Front Range watersheds from high-severity wildfires. The purpose of this Work Group is to develop a methodology to identify and prioritize those watersheds that provide or convey water used by communities and municipalities. This identification of priority watersheds will, in turn, assist in prioritizing watersheds for hazard reduction treatments or other watershed protection measures.

The Colorado State Forest Service and the Work Group have found that high severity fires significantly affect drinking water quality. The potential of a watershed to deliver sediments following wildfires depends on forest and soil conditions, the physical configuration of the watersheds, and the sequence and magnitude of rain falling on the burned area. High severity fires can cause changes to watershed conditions that are capable of dramatically altering runoff and erosion processes in watersheds. Water and sediment yields may increase as more of the forest floor is affected by fire. The Pinchot Institute for Conservation evaluated the wildfire hazard for the 10 Front Range counties based on data provided by the Colorado State Forest Service. The results of this analysis were used to assess wildfire hazards by ranking sixth-level watersheds by the final watershed prioritization method. This ranking method combines the composite hazard ranking system with the water use rankings explained below.

The composite hazard ranking system has 5 categories: Low, Moderate, Moderate-High, High and Very High that are used to create a composite hazard ranking map. The system combines the wildfire hazard ranking, the flooding/debris flow risk ranking and the soil erodibility ranking by averaging each individual numerical ranking values for all sixth-level (12 digit) watersheds within a certain area and then maps the results. The three components of the composite hazard ranking system have the same 5 categories. The wildfire hazard ranking focuses on existing forest conditions. The flooding/debris flow risk ranking is a combination of the slope and the road density of the watershed area. It was determined that slope has a higher value than road density in this ranking system because road density, on post-wildfire effects, was determined to be more variable than slope measurements. The soil erodibility ranking categorizes the effects of high-severity fires on runoff and erosion processes in watersheds.

The other part of the final watershed prioritization ranking is the water use rankings, which use Source Water Assessment and Protection (SWAP) definitions on sixth-level watersheds that contain water nodes. Water nodes are coordinate points of different sources of drinking water. SWAP also develops source water assessment areas (SWAA) that are analyzed to see if different public water systems overlap. The water uses ranking gives a sixth-level watershed a numeric ranking of either zero or one. Combining the composite hazard ranking and water uses ranking involves increasing the hazard categories for each sixth-level watershed from the composite hazard ranking map by one category for each watershed with a water uses ranking value of one. The result is mapped as the final watershed prioritization map.